

observations and experiments rather than abstract contemplations are to be preferred. This will of course apply only to those who have leisure, inclination and capacity for such occupations, and to that class who require more especially excitement of the intellectual faculties.

In other cases, the social and moral sentiments are to be operated upon by the formation of new connections, assuming new responsibilities, and by directing the mind to objects which are calculated to engage the feelings of benevolence and philanthropy—such are politics, the cause of popular education, and the numerous particular plans of every scale of magnitude, tending to the amelioration and improvement of the human race.

The selection of any of these measures, as has been already remarked, will depend upon the combination of circumstances which distinguish the cases individually and is to be left to the discrimination of the medical adviser.

The hearty co-operation of the patient is of course requisite to the prosecution of any plan, and with a view to this the whole subject should be fully discussed and the state of the case frankly stated. One good result will at least accrue from such a course; it will tend to preserve feelings of respect for the character of the medical profession with a class of patients whose experience of it too often leads them to entertain opposite sentiments.

BUFFALO, August, 1840.

ART. IV.—*Two Cases of Aneurism, exhibiting the necessity of a Ligature, both above and below the Tumour.* By WM. E. HORNER, M.D., Professor of Anatomy in the University of Pennsylvania.

CASE I. *Varicose Aneurism of the Femoral Artery.—Operation followed by Mortification of Limb and Death.*—Col. P., of Florida, ætat. 30, stature 6 feet 2 inches, usual weight 170lb, while engaged in the service against the Seminole Indians, was wounded, April 15th, 1837, by a ball accidentally discharged from a pistol which he wore under his waistcoat. The ball was rather larger than a buckshot (say 80 to the pound.) It entered the left thigh two inches below, and a little within, the anterior superior spinous process of the ilium, and ranging very nearly in a line with Poupart's ligament, came out on the inner side of the thigh a little below the scrotum.

There was profuse hæmorrhage, estimated at from 8 to 12 pints;—the patient fainted immediately and continued insensible till the next day. An extreme swelling of the thigh followed—numbness and irregular sensations, with some slight bleeding at intervals afterwards.

July 8th, 1837. His present state is one of considerable emaciation, but his spirits are very good. The left thigh has a strongly pulsating tumour

just below Poupart's ligament, and in the course of the femoral blood-vessels; the tumour appears to be two or more inches in its transverse diameter, length not so discernible; its pulsation is arrested by pressure on the femoral artery above; also by pressing on the artery at a point corresponding with the track of the ball, and where there is a sensation imparted of a hole in the artery; the femoral vein feels enlarged as it goes under Poupart's ligament, and has a pulsation in it. The superficial veins of the leg are smaller than usual, the saphena scarcely perceptible. To the finger the tumour has the thrill and vibratory motion of varicose aneurism, and a stethoscope applied to it conveys a noise like that of a distant waterfall or mill race, broken in upon by a pounding corresponding with the beat of the heart, and intermixed with a loud quick purring like that of a cat going to sleep. It is extremely sensible to pressure; the extremity is useless; the patient's common position is on his back, with the thigh in a state of semiabduction, and brought a few degrees forward to loosen the parts at the groin.

The pulse of the wrist has a short globular stroke with a very distinct interval; a very strong pulsation is felt in the epigastric region extending to the umbilicus, a feeble wavy pulsation is also felt in the right femoral vein just at Poupart's ligament. The probability is, that the latter, as well as the epigastric pulsation comes from the arterial blood flowing from the left femoral artery into the vein and thus giving a pulsation to the ascending cava and its branches.

11th. He was operated upon in the following manner, by Dr. T. Harris, his attending surgeon, with whom I acted in consultation. A fold of the skin being pinched up was slit in the course of the femoral artery, and by careful dissection, the artery was exposed immediately below Poupart's ligament; the tumour also was partially seen. As much of the sheath of the artery as could be was left; an aneurism needle fastened to a handle, and with a single ligature, was then passed by myself from the outer side of the artery around it, and the artery tied by Dr. Harris. The pulsation immediately ceased in the tumour, the epigastric pulsation also ceased, and that of the femoral vein of the other side; the pulse at the wrist made a longer and more sustained stroke.

The operation was borne with the most manly fortitude. The afternoon and evening were spent in high excitement and restlessness from violent pain flying to different parts of the limb and hip and finally settling in the incision, where the sensation was that of every thing tearing to pieces. It was directed at 9 o'clock to keep four leeches in relays on each temple for an hour, and to give an injection, *mur. morph.* 0.5 gr. every two hours.

An examination of the venous circulation in the foot at this time, showed that it was going on; temperature of limb extremely low; it had been surrounded by cotton and a warm brick put to the foot.

12th. An exceedingly restless agitated night was spent; took only one injection. The foot and upper half of thigh present the appearance of pur-

pura ecchymotica, from the slow circulation in the veins; slight infiltration of blood. Temperature of upper half of thigh good, below that the extremity is cold. Complains of severe pain in incision and in left testicle. R. Pulv. Dov. ʒj, Gum. Arab. ʒj. M. Ft. Pulv. div. in chart No. vi. One every two hours with some hot lemonade. 12 $\frac{1}{2}$ o'clock more tranquil, has dozed.

13/h. The Pulv. Dov. has had a most tranquillizing effect; he slept well during the night; stomach slightly sick.

The circulation of the limb very slow, and rather equivocal; a cadaverous coldness of the limb from the middle of the thigh downwards, and especially manifested on the knee. Dover's powder continued; about night he vomited, and was relieved of nausea by it; complaining of colicky feeling in the evening, an injection of warm water was administered which brought away a considerable quantity of gas.

14/h. Had a tolerably good night; coldness of limb continued. An oblique circle on thigh, about one-third of its length above knee, of extravasated blood, which had showed itself somewhat from the day after the operation, is now more distinct, and seems to indicate an arrest of the circulation of arterial blood there. Beginning about six inches above the knee, and being half an inch wide, this circle passes on each side towards the ham; the foot looks blue and discoloured; the veins from it upwards flabby, and presenting slightly the appearance of an exsmosis of blood along their trunks and branches, such as occurs in the dead body. 9 A. M. Bottles of hot water placed along the limb. 1 P. M. They were discontinued, owing to the inconvenience of fixing them, and bags of heated oats substituted. 9 P. M. Limb warm, of a better colour, and circulation apparently somewhat improved.

15/h. The cuticle about the knee loosened itself last night, and the warmth of a bag of oats resting upon it, dried up an area of skin where the cuticle was detached, about the size of a dollar.

An evident plumbeous tint to all the extremity below the oblique circle on thigh (*purpura ecchymotica*); no sensation in it; slight factor: exsmosis along veins more spread. Wound dressed, looks well.

16/h. Symptoms of sphacelus below the oblique circle now fully exhibited in the cuticle being every where loose; with the limb of the colour of white paint turned black by the action of sulphuretted hydrogen gas; entire want of sensation in it, with exsmosis of blood more spread.

The thigh above the oblique circle swollen and extremely sensible. Patient lively; tongue clean; pulse a little more frequent than natural.

In the evening, a healthy evacuation from the use of sulphate of magnesia during the day. Wound dressed; suppurates; looks well.

It may be remarked here that the patient having come to town with an ulcer on the external ankle of the affected leg produced by pressure, this ulcer continued for two days after the operation, as it had previously been very sensible; but from a state of suppuration, it oozed nothing but black

blood after the time of the operation. On the 16th, the skin all around it was black and sphacelated.

17th. Disposed to be excitable and flighty, mortified part very black, and boundaries strongly marked. Wound from operation, suppurating well. Sol. chl. sod. to gangrene.

18th. Thigh above mortification extremely sensible, and swollen largely; reddish; veins enlarged with a languid circulation in them, and somewhat of a disposition to exosmosis of blood along their trunks. Mortification advanced of a black colour up to middle of thigh. Has spent a very restless semidelirious night—pulse 140 per minute. Wound has granulated and looks well; with a purulent discharge; latter blackish, however, perhaps from the lead in the sticking plaster.

19th. Mortification progressing upwards; general symptoms about the same with the addition that he is now under the influence of morphia, which is given to him every few hours. The limb is very black and tumid, and would emit a great stench were it not for the solut. of chl. of sod. which has been constantly on it. Camphor liniment in cloths to be applied to unmortified part of thigh. Morphia every few hours, so administered as to keep him tranquil.

20th. Mortification still advancing up the thigh; it is now only a few inches, below the groin, and the latter is tumid and inflamed. The dressing of the wound is very painful; this evening it gaps open an inch or more, and having ceased to suppurate, its bottom is covered with a thick coat of white coagulating lymph.

The patient was very restless during the forenoon; about mid-day, he was informed that his medical attendants were in despair of his recovery; his wanderings of mind ceased; he sent for a friend to make some arrangements, and then continued tranquil with a disposition to sleep for the remainder of the day. His pulse on two examinations, one at 5 o'clock P. M. and another at 9½, intermitted about every seventeenth stroke.

21st. All the symptoms aggravated since yesterday; some little oozing of blood from wound. On being further informed of the precariousness of his situation, he observed that if the artery gave way he did not wish the blood arrested, as the protracting of his life for a day or two more in the state he was in, could be of no use.

23d. Mortification still progressing upwards; morphia continued 0.5 gr. every three hours; other symptoms as usual; scrotum much enlarged; flabby; œdematous; of a black colour, with cuticle disposed to separate.

25th. A point of mortification which showed itself two days ago by a bloody vesication below the anterior superior spinous process of ilium has extended itself; scrotum to our surprise is now small; corrugated; firm; and cuticle sticking close, a new one probably having been formed in place of detached one. The mortified limb is perfectly black with the exception of a few inches about the knee, and emphysematous; maggots have been deve-

loped in great numbers under separated cuticle of thigh, leg, and foot; by means of spirits of turpentine we killed nearly all of them; fœtor of limb much corrected by the fomentations of chloride of lime.

26th. General condition of patient not worse than at preceding periods, mind clear and composed; hiccough. Thigh cut off through mortified portion to diminish fœtor, and to prevent the sulphuretted hydrogen gas from being driven between muscles, up to the trunk of body, which we suppose may already have accelerated the progress of the mortification upwards; operation about six inches below hip joint. Black drop (Quaker) 10 gtt. at night, to be repeated as required.

27th. Mortification progressed a few lines upwards; skin above it rather more healthy in its appearance; hiccough; pulse still intermittent at times. Bowels opened at night with a solution of sulph. of magnesia in soda water.

28th. Mortification seems to be arrested; skin contiguous looks like an effort to detach mortified part; cut off some large pieces of muscle and skin that were entirely dead; original wound suppurating well; hiccup still continues. Prescribed for latter, Mist. Moschæ, ʒss, every hour. Put a poultice of Indian meal and porter on stump.

Hiccough still continues at 1 P. M, but patient collected and cheerful. He was permitted to use English Brown Stout and Champagne with water for a common drink.

Finding in the evening that the hiccough continued, I abandoned the musk mixture, and gave 3 gr. pulv. Dover, every two hours.*

29th. The pulv. Dov. had the effect of allaying the hiccough, and procuring a night of tranquillity. On dressing the stump, found the original incision suppurating finely, and looking well, notwithstanding that sphacelus had reached its inferior end. The sphacelated muscles are in a state of putrescence, soft and shortened; found a sphacelated sinus as broad as the four fingers under the gluteal fascia, above the trochanter major; it seemed to have been formed for some time, and probably preceded the sphacelation of the skin in an angle above it. Muscles of the crus of the pubes and ischium sphacelated to within a little distance of their origin. Dressed stump at 9 o'clock with cataplasm of Indian corn meal and Durand's solut. chl. sod.

Dover's powder continued; hiccough returned this afternoon; gave in addition six drops of black drop. Pulse very intermittent, and irregularly so all day; prostration of strength increased.

When I saw him at 8 P. M., the pulse had increased its irregularity of stroke; the hiccough continued, but not so bad. He drank a tumbler of cold milk with great satisfaction; had his stump dressed with strips of lint im-

* At this period, the principal duty of attendance devolved upon myself, owing to Dr. Harris's health being so deranged that it was absolutely necessary for him to retire from the city for the benefit of the country air, and which he did with great reluctance viewing the critical situation of our patient.

bued with the sol. of chl. sod. Discontinued Dover's powder; ordered two drops of Quaker drop at 10 P. M., and ten at 3 A. M. Cold milk to be given occasionally during night.

30th. On calling at half after 6 A. M., found him in a very tranquil sleep; and learned that he had spent the night in moderate comfort. 9 A. M. Countenance clear; tongue nearly clean; mind vivid. Mortification seems definitely arrested, and the work of elimination going on, by a seam between dead skin and living which is open here and there for two or more inches, and suppurating. Some of the muscular shreds snuffluid from putrefaction; removed them. Pus begins to be secreted copiously from the inlets or fissures in stump, between muscles and skin, especially under a loose flap.

Directed an exclusive milk diet; dressed stump again with bits of lint impregnated with sol. of chl. sod. 9 P. M. Strength good; day passed in alternate rest and agitation; hiccough still continues; has taken some doses of Quaker drop. Process of separation of dead from living parts progressing handsomely, especially as regards skin, which is now almost ready to be detached. Renewed his bed arrangements; repeated same dressing on stump with basilicon on skin and place of original operation. The gluteus medius muscle under the flap of skin, feels as if it was converted into a soft putrid pulp. Directed a renewal of opiates during night; and tea-spoonful of Hoffman's anodyne to relieve a spasm in the glottis occurring during hiccough.

31st. Found him at half after 6 A. M. in a deep sleep, with warm perspiration, and some singultus. At 9, dressed stump; seams between living and dead skin more open and loose; removed several large pieces of dead skin, and some bits of muscle; suppuration free and healthy from exposed living surfaces. Dressing, chlor. of sod. with lint. Day spent in comparative ease, till towards the close of the afternoon, when his stomach became sickened by a piece of bread. A good discharge from his bowels, owing to a solution of $\frac{3}{4}$ j. sulph. Magnes. in Soda water given about 10 A. M. Dressed stump this evening at 8 o'clock, with Ung. Basilicon after pouring some sol. chl. sod. over it; and gave a dose of solut. of sulph. morph. gtt. xl, to be repeated gtt. xxx, at 1 A. M. It is now a subject of habitual remark to us, that the singultus stops whenever he is in pain from dressing the wound and stump.

August 1st. Has had a good night, with the exception of severe singultus occasionally. Dressed stump at 9 A. M., and found suppuration proceeding finely, as well as the loosening of the sphacelated skin and muscles; small portions of both cut away. Dressed with basilicon on lint; covered this dressing with a cloth imbued with sol. chl. sod.

Day spent in considerable exhilaration of spirits; cheerful lively conversation with friends; breakfast of mutton chop; dinner of beef steak.

Dressing as in morning renewed at 8 o'clock in the evening; gtt. xl solut. sulph. morph.; and gtt. xxx, to be taken at 1 A. M.

2d. An evident improvement in every respect. Cut away ligature from femoral artery, it being now the twenty-second day. Dressings and treatment as yesterday; spirits of patient excellent; hiccough almost gone. A whitish spherical tumour, an inch and a half in diameter, extremely sensible to the touch, but without pulsation, and which I had observed for a day or two, now attracted my attention particularly. I felt doubtful whether it was the aneurismal tumour; a cyst containing matter; or a tumour formed on the course of the anterior crural nerve. Having it on my mind, I expressed to Dr. Goddard, in consultation, since the departure of Dr. Harris, my uneasiness on the subject. This occurred at our visit and dressing at 8 P. M., and we parted about 9.

3d. Bowels spontaneously evacuated this morning about 6 o'clock. At 9, found that our patient had passed a good night. Determined to explore the character of the tumour which had obtained our attention, I began to dissect from it the mass of mortified muscle at its inner side, and then made a puncture into it; a flow of arterial blood immediately followed. I passed my finger into the orifice to check the hæmorrhage, and to obtain time for reflecting on its cause and the mode of proceeding. My first idea was, that I had acted prematurely in taking away yesterday the ligature from the femoral artery; but from this scruple, I was relieved by ascertaining that pressure on the femoral artery did not stop the bleeding; consequently, there must be a collateral supply of blood. I then determined to explore the whole circumference of the tumour, and to surround it in every direction with ligatures; with that view, I cut through an isthmus of living matter, in front of the femoral vessels, consisting principally of fascia, and some adhering cellular substance. On doing which, it became clear that the tumour was aneurismal, and that the disease had returned. I also perceived a very thin cul de sac, hemispherical, and half an inch in diameter, connected with the aneurismal tumour and pulsating strongly. In the manipulations of the sac this tumour burst and bled freely. I then proceeded in tying in masses every thing connected with the sac, in consequence of my finding the structure so altered, and so many vascular connections of the sac, that the ordinary arterial arrangement was much modified, if not radically changed. I put ligatures above in the line of the femoral artery, another in the direction of the os femoris; another in that of the pubes, and another between the most posterior face of the tumour, and the trochanter minor. The latter being done according to the suggestion of Dr. Goddard, who, during this time held the aneurism in a state of compression which arrested the bleeding, and saved us from the distress of seeing our patient die on the spot.

These events were attended with a flow of blood from the original seat of the operation, and I then supposed that the artery had ruptured at the spot where its ligature had been, but when all the new ligatures had got their position, this bleeding ceased, so that the probability is, it came from a retrograde instead of a downward current of blood, and which was proved in the

dissection after death. The obscurity of the vascular connections of the aneurism, and of its internal arrangements compels me rather to conjecture than to state it as a point ascertained, but I am of opinion that the place punctured by me first was the enlarged femoral vein; and the protuberance which ruptured was the aneurismal sac. The principal part of the bleeding and the most rapid gush of blood was certainly from the latter; the orifice of communication between the two vessels, was, therefore, still open as it had been.*

Returning at half after 1 P. M., found the dressings beginning to soak with fresh blood, of which the patient had lost about a gill or more. I opened the stump, and secured some small arteries near the capsular ligament of the hip joint, which had been cut in the previous affair. A faintness of a most deadly and unpromising kind now came over him; his pulse almost unaccountably rapid and feeble; his respiration in long heaving efforts; complexion cadaverous; and a cold copious exhalation from every part of him. (The day was very warm, as the thermometer stood in the shade at 82.)

He continued, with slight variations of symptoms, improving and then receding, and hanging, as it were, on the skirts of life, during the remainder of this day. A table-spoonful of volatile julep was administered every twenty or thirty minutes, with an allowance also of mint julep. At 10 P. M., some augmentation of pulse; the volatile julep was then for the rest of the night given every hour, or else some rich beef broth; and as he now became very drowsy, he was not permitted to sleep on any account more than an hour at a time, but to be roused up to take his medicine or nourishment.

4th. He feels sensibly his weakness this morning, and his spirits are more broken than before, with his mind, however, perfectly tranquil and collected. No hæmorrhage; stump easy. On dressing it at 9 A. M., the suppuration was observed to have been resumed at the points where it previously existed.

The day was spent under the use of nourishing diet; he begins, however, to be troubled with pain in the right side of the throat, about the origin of the œsophagus, and is unwilling to swallow; we have, therefore, to urge him. This pain is attended with a collection in the pharynx of an inspissated mucus, which is raised with difficulty. I prescribed for this affection, frictions of volatile liniment.

* Having apprehended some such trying scene as the present, and feeling a distrust in the facility of applying the usual fixed needles for hæmorrhage, I had prepared, some days beforehand, and kept ready in the room a hæmostatic needle of a design somewhat novel. This needle, with the prompt and expert aid rendered to me by Dr. Goddard, I found invaluable in proceeding rapidly and systematically to secure so many routes of arteries. The instrument has since become the subject of a communication in the *Medical Examiner* of 29th August, 1840.

[A figure and description of this instrument will be found in the *American Intelligence* of the present number of this Journal.—Ed.]

In the evening, had a well-marked fever, with pulse of some force. Took gtt. xxx sol. morph. at 10. No hemorrhage to this time; did not dress stump; fœtor considerable.

5th. Spent last night tranquilly; had a slight chill about 7 A. M., which ended in a fever with copious perspiration which was over about 1 o'clock; at this time, we changed his shirt and bedding, at which he expressed great relief.

Dressed stump at 9 A. M.; sphacelation of parts included in ligatures of 3d inst., very distinct, except skin in front; old sphacelated muscles, being the adductors, black and pulpy; flap contracted and thickened; suppuration healthy and abundant; no hemorrhage. At 1 P. M., began to administer ʒij. of infus. of serpentar. every two hours, which was discontinued in the evening. Morph. solut. gtt. xl, at night.

6th. The patient is somewhat recruited; ordered an infusion of Cort. Peruv. with elix. vitriol; ʒij of former, to gtt. v of latter every two hours. Pain in the throat augmented, and an uneasiness extending down to the epigastric region. I prescribed in the evening, for the relief of the viscid expectoration as follows: R. Gum Arab. ʒj; Aq. fluv. i j; Elix. paregor. ʒss; Acid. lim. ʒiss; Sacch. q. s. M. Dose of two ounces to be repeated every two hours during the night; gtt. xl, sol. morph. to be put into the first dose. At the dressing in the morning, we perceived that the suppuration of the stump was going on.

7th. Dressed the stump at 9 A. M, and removed from it a considerable quantity of putrefied mollescent muscle. Parts included in ligatures of 3d inst. black, mollescent, putrefied, and furnishing no hemorrhage.

The removal of the sphacelated muscles brought into very distinct view the ischiatic nerve, which I observed at the time of the amputation to be alive and very hard, and that it bled at the end, though surrounded by mortified parts. It was now tumid, more than half an inch in diameter; inflamed, red, and manifested most intolerable pain on being touched. The exposed living parts suppurating. He suffered extreme pain on this dressing, and was enfeebled by it.

At 1 P. M, he was much oppressed with sleepiness; in a drenching perspiration; and his pulse very quick and enfeebled. As he lay in bed, he resembled a breathing corpse and was so debilitated, that some changes in his bed and personal attire which were then contemplated, were postponed till evening.

He began at 7 A. M., to take the infusion of bark with elix. vitriol, and continued it every two hours during the day till 10 at night. At 11 P. M., took xl, gtt. solut. morph.; and two doses of the infus. cinchon. and elix. vitriol during night. This day was spent in great debility, but in the evening, he revived somewhat.

Tuesday 8th. 28 days since the first operation. At 6 A. M., I found him much debilitated from a drenching perspiration; his voice feeble and plaintive. He complains much of his mouth which is becoming aphthous;

ordered a wash of sage for it; and gave him a parboiled egg, to be repeated every two or three hours. Discontinued infus. of bark and elix. of vitriol, under an apprehension that the quantity of fluid favoured his perspiration. Determined also to discontinue opiates at night.

At 9 o'clock, dressed stump; the granulating parts looked well, and had discharged a good pus; removed some of the sphacelated pulp on adductor muscles; the aneurismal tumour is black, dead and almost ready to drop off. The ends of three nerves are now exposed for an inch or two and are in a state of inflammation; the sciatic; the obturator; and the anterior crural, all of which give excessive pain on the lightest touch. Put basilicon along the edges of the stump, and covered its face with dry lint; fixed some sticking plaster strips to bring up flap, and Dr. Goddard contrived a swing of the same for the sciatic nerve. Afterwards covered the stump with a thickness of unspread patent lint; and left off an oil cloth which had been heretofore used to cover it.

Indications of a bad ulcer on point of coccyx, and on the posterior superior spinous process of right side; changed his bed-clothes. Observed that the air bed of gum elastic cloth which he had used heretofore, had collected a large quantity of moisture, on all the surface applied to the back of his thorax, from the perspiration. Sudamina on abdomen.

Extremely ill in the evening; pain in right shoulder in which he had received a pistol ball when he was 19 years of age; pain in hips; fever and excessive perspiration; discharge of stump diminished. Raised him up and put three folded blankets between him and his air bed, for the purpose of making it softer, and preventing the accumulation of moisture under him. He took during the day three eggs and some boiled custard.

9th. 6 A. M. In profuse perspiration; difficulty in swallowing still continues; slight delirium and incoherence. Evident declension since yesterday, but not so rapid as I expected. At 9 A. M. on visiting, found a small puddle, one ounce, of coagulated blood between his buttocks. This produced strong apprehensions that some vessel of importance had given way; and before any thing more was done, I got my instruments ready for a serious operation. On raising up integuments, I found two small strings of coagulated blood, which I traced to their source in the base of a process of integuments, where the ligature of the 3d inst. had been fixed on it, and on the trunks of the femoral vessels leading to the aneurismal sac. The latter was now nearly detached, adhering only by two or three vascular filaments; on cutting through the latter, the sac fell off, and a little dry lint stopped what remained of the hemorrhage.

The slight loss of blood seemed to have relieved his delirium; stump suppurates freely, and looks well. It is now a fair granulating surface, with the exception of the origins of adductor muscles in part, and of the hamstring. The sphacelus has swept away the muscles of the thigh; clear up to the obturator externus, the small rotator muscles on the back of the buttock

are visible, and also in a granulating condition. The insertion of the gluteus magnus is left.

He spent this day in such extreme illness with delirium, that it was not thought proper to change his shirt or disturb him in any way, except by administering such articles as he called for.

In the evening, the stump was found to have suppurated still more freely; probably, in consequence of its having been covered more closely with basilicon than it had been the day before.

10th. 6 A. M. Mind more collected; voice better; swallowing better; pulse full, strong, frequent; skin warm and contracted. Has not lost in strength for twenty-four hours. At 9 A. M., dressed stump, and found that it had suppurated well since last evening; mortified muscles still detaching; cut off some ounces of them. Inferior end of femoral vein seems to be open, which imparted a suspicion, that the bleeding of yesterday had come from it, at least in part. Dressing as usual, painful. At 1 P. M., raised him up changed his bed-clothing and his shirt, all of which he bore well; bed ulcers not worse. He spent this day on the whole, in a better state than the preceding.

11th. Has had rather a bad night; debility increased; mind unsettled; respiration hurried and laboured, larynx moving up and down with each act of it; skin moist, cold and flabby with cold wrists; moribund rattle. In consequence of being raised in bed last night, about one o'clock a hemorrhage had occurred, apparently from the femoral vein. Dr. Goddard was sent for, but it had stopped on his arrival; its amount was an ounce or two. His stump was also flabby; the secretion of pus had diminished, and was rather greenish. The sciatic nerve, from being tumid, hard, and with a feeling of erection in it somewhat like a child's penis, was collapsed and flexible. There was also a cadaverous smell in his breath. In short, every thing indicated that a life, protracted under such difficult circumstances, is about yielding. On dressing him at 9 A. M., I introduced a dossil of lint imbued with a strong solution of sulphate of copper into the femoral vein and also into the femoral artery, and sustained them in position by a roll of patent lint, at their base.

He died on the morning of the 12th, at half after 3, without a struggle.

12th. *Necropsy* at 12 A. M. His frame had become extremely attenuated and emaciated. The viscera of the abdomen were perfectly sound. *Stump*.—All the muscles whose insertion or attachment was below the trochanter minor had sloughed or sphacelated to their origins, excepting the gluteus magnus. The cellular substance surrounding the sciatic nerve was sphacelated to within a few lines of the sciatic notch. This nerve was still more flabby than at the dressing of yesterday morning at 9 o'clock, and was covered with a thick coat of coagulating lymph.

The os femoris was in a state of necrosis up to the epiphysis formed by its head, and by the trochanter major. On being opened with a saw, a dark-

ish serpentine line indicated the demarcation of the previously dead part; and the cells of the latter appeared to have undergone a limited suppuration. The bone being struck on its head, before it was sawed open, emitted a hollow sound. Some pus was found in the hip joint, the synovial membrane of which had a dark appearance. The anterior half of the cartilage of the os femoris was thinned by absorption apparently from the surface, which may have been done by the contiguous synovial membrane which covers the capsular ligament, as the cartilage from the fixed position of the limb had been, probably, since the original accident in contact with the synovial membrane; part of the cartilage in this region of the bone was entirely absorbed. The capsular ligament was sound.

The femoral artery just above the place of the original ligature was converted by its influence into a cul de sac; the bottom of which was firm, adherent, and about a line in thickness, and had a conical coagulum of bloody fibrine adhering firmly to it, about three lines long—with the apex upwards, and terminating at the orifice of a small artery, perhaps one of the external pudics. To this apex was appended a filament of the same fibrine, an inch or more long, running upwards in the canal of the artery.

Exactly where the ligature had been placed, the artery had been cut through by it, and the canal of the artery put on the appearance of a dilatation, and was continuous also with the original wound now reduced to the state of a small conical cavity. The artery was pervious from that to its inferior end. Trunk of artery thickened.

The femoral vein was open below; a probe passed unobstructedly from its inferior orifice upwards *sine limine* into the iliac. It was enclosed, as well as the iliac and the lower part of the ascending cava in an additional coat of tenacious fibrinous matter, which made them adhere firmly all along their course to the corresponding arteries and subjacent fascia iliaca. The external coat of the femoral and iliac vein was thickened and hard; and the internal coat exhibited the remains of strong inflammation, by its irregular slate-coloured surface, covered with a deposit of coagulating lymph. This appearance and deposit went up the ascending cava on its left side for two or three inches and there terminated in an angular manner. On the cava of this region were found some two or three plates, oval, half an inch in diameter, looking very much like the glands of Peyer in the intestines. Some lymphatic glands in a state of suppuration containing a small quantity of fetid slate-coloured pus existed in the course of the iliac vessels. No suppuration existed around the rectum and bladder.

Thus finished this most important case of aneurism, and the reflections arising from it are:—

1. Did not the mortification ensue from its being easier, on the ligature being applied to the femoral artery, for the arterial blood to flow by the anastomoses of the obturator, gluteal or ischiatic arteries into the circumflex—thence into the sac, and return thence by the femoral vein, than flow to the

foot and parts below the groin? The freedom of this anastomotic communication with the sac was proved, by the aneurism continuing, though the main current of blood through the femoral artery was cut off, as proved by the necropsy. Would it not, therefore, be always proper to scure in every direction the arterial trunks, primary and collateral, communicating with a varicose aneurism, so as to force the blood downwards to the limb below, and thus prevent the possibility of its returning to the vein without a complete circulation?

2. Did not much of the extent of this mortification, at least in the thigh, depend upon the deleterious gas generated by it below, forcing itself upwards by emphysema under the skin, and between the interstices of the muscles? In those cases, therefore, is it not better to open freely the integuments and even the fascia to prevent such an accident, or to perform amputation?

3. Without the hemorrhage of the 3d inst., and the severe operation attending it, would it have been possible to save the patient, inasmuch as he was so well on the 2d?

4. To what are we to attribute the necrosis, or premature death of the os femoris—to the disease or to the operation which shut off the supply of blood to the part?

5. What produced the inflammation of the hip joint, and what was its date?

6. What was the date of the inflammation of the vein;—did it correspond with the progress of the mortification, or was the ligature of the 3d inst. its cause?

7. What influence had this venous inflammation, and also that of the three nerves, the ischiatic, the obturator, and the anterior crural on the constitutional symptoms and the final failure to cure?

8. The sensibility to pressure from which the patient suffered so much at the first consultation, that he felt the pain twenty-four hours afterwards, what was its source? Did it arise from the then existing inflammation of the femoral and iliac veins? The thickening of these veins, and the additional perfectly organised coat thrown over, indicate an inflammation anterior to Dr. Harris's operation, and probably from the time of the wound. This inflammation suffered an exasperation immediately following the mortification; a second one afterwards; and a third also from the operation of the 3d of August, judging from the recent appearance of the coagulating lymph, on the interior of the vein.

Would it not, therefore, be proper in all those cases of painful sensibility in the aneurismal tumour, and the vein leading from it, to endeavour to diminish the inflammation by leeches, poultices, and so on, and to cure it if possible, before an operation?

9. Ought we not, before obliterating a main arterial trunk, to spend, if it be at our option, some time in dilating the collateral branches, by pressure on the trunk itself, interruptedly applied? This salutary practice appears to have fallen into unmerited disuse.

CASE II. *Aneurism from Venescction*.—Miss B., of Georgia, ætat. 8 years, being exceedingly ill in March, 1837, was bled by a physician in the left arm, at its bend. Nothing unusual at the time was perceived, but in a week afterwards, she felt a small pulsating tumour, the size of a pea: it continued to increase, and she was brought by her parents to Philadelphia, and placed under the charge of Dr. J. Randolph, who called me into consultation.

At this time, September 27th, 1837, the tumour is about the size of a large filbert; has a strong pulsating motion which may be felt vertically; laterally; and also when the arm is bent, and the tumour pulled up from it. Pressure diminishes its size to one half; it then remains hard and unyielding. Pressure on the brachial artery arrests its pulsation. There is no thrill or purring noise as in varicose aneurism; the vein which was opened at the point of bleeding, is not visible.

On the 29th of September, an operation was performed by Dr. Randolph, the course of the blood being regulated by a tourniquet on the arm. The skin was slit up for two or three inches in front of the tumour, which exposed the tumour beneath the fascia of the arm and the aponeurosis of the biceps; these being dissected through, the tumour was laid bare by continuing the dissection over its surface, so as to exhibit the brachial artery and vein both above and below it. A ligature common to the two vessels was then carried under them, above the aneurismal tumour; it, upon trial, was found to control the pulsations of the tumour; it was then fixed, and the aneurismal tumour cut open. Upon slacking the tourniquet, blood issued from the tumour freely; a ligature was then fixed upon the artery and vein below the tumour; upon loosening the tourniquet again, blood flowed from the tumour, but not so freely. The tumour was now detached still more from its bed; a knife-handle passed under its middle, and along it, one ligature conveyed above, and another below; these ligatures were directed in such a way as to insulate the tumour completely, by being tied above it and below it; the one below being drawn first was found to restrain the bleeding completely, but to make every thing secure, and to put the disease beyond any possibility of recurrence, the upper ligature was also fixed.

The vein which probably was the one that had been bled was seen in front of the sac adhering closely to it; it appeared to be almost obliterated below, and was very small above. There was nothing like a varicose state perceptible in it; so that if it had really been punctured, the wound had healed.

The sides of the tumour were very thick, and indurated, which will account for its not being entirely flattened or collapsed by pressure before the operation, and there was no coagulated blood. Whether it was formed by a dilatation of the artery, or by a cyst on its side, was not ascertained, from the obscurity of parts during the operation.

The tumour sloughed off kindly in this case, and the wound healed by the 20th of October, the recovery being perfect.